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ABSTRACT

This study analyzed the enrollment of two computer classes at a public high school in northern Indiana to see if there was any computer inequity. The two classes examined--an introduction to computers course and a computer programming course--were studied over a period of four years. The sample consisted of 388 students in four years of the introductory course and 127 students in four years of the programming course. The variables analyzed for each student were sex, year in school, race, grade in computer class, mathematics course taken either previously or simultaneously with computer class, grade in that mathematics course, and a composite raw score from the Metropolitan Achievement Test given in the 9th grade. The sample size was too small to permit an analysis on the basis of race. Analysis of the data showed the possibility of an increase or at least a stabilization of the enrollment in the two courses. Each year there were more females than males in the introductory course, but more males than females in the programming course. There was no statistically significant difference between the computer grades of males and females. The two classes were reaching mostly intermediate- and high-level mathematics students, but there were also some basic-level students enrolled in the two courses. There were statistically significant positive correlations between the computer grade and both the mathematics grade and the composite achievement score. Some inequities in enrollment were found in gender, year in school, and mathematics, but determination of whether these differences posed a problem were beyond the scope of this study. Of the 25 hypotheses tested by this study, eight were retained. An appendix contains the data examined in the study, and 14 references are provided. (EW)

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INEQUITIES IN THE COMPUTER CLASSROOM/ AN ANALYSIS OF TWO COMPUTER COURSES

by

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Submitted in partial fulfillment of the requirements

for the course S591 Exit Project

Indiana University at South Bend

July 1988

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CHAPTER I

In the April, 1988, KIWANIS MAGAZINE, Diane Calkins reported that, according to the United States Department of Labor, "when today's children grow up, 50 to 75 percent of all jobs will involve computers" (27). Will our children be ready to fill those jobs? The number of computers in schools and homes is increasing rapidly. It is becoming commonplace for a high school to have a computer lab with many computers and to offer one or more computer courses. Becker and Sterling surveyed 7,766 principals and computer-using teachers in 1985 and found four times as many computers as in their first survey in 1983 (291). They also found that the computers were being used about 50 percent more often, and the amount of time spent by computer-using students had doubled (294). But in this country where we, as a nation, strive for equal education for all, do ALL children have equal access to these computers? Calkins reported that one computer equity advocate group believes that many youths are denied access to computer training because of their "gender, school and student income level, race, age, ability and academic achievement, geography, and subject matter" (27).

The idea for this study began developing as a result of the above-mentioned article and the author/computer teacher's desire to know whether or not there were inequities in her classroom.

STATEMENT OF THE PROBLEM

This study will analyze the enrollment of two computer classes at a public high school in northern Indiana to see if there is any evidence of computer inequity in the classes.

JUSTIFICATION

Miura and Hess were concerned about the "growing gender gap in computer access, interest, and usage" (8). Their research convinced them that "... computer knowledge and programming skills are not being acquired equitably" (17). Fetler was convinced that "our involvement with computers can only increase. To be less knowledgeable about the basic aspects of computer technology is to be less able to participate in our culture. ...Girls either have or take advantage of fewer opportunities to work with and learn about computers..." (189). Lucking believed that "females may be eliminating themselves at a very early age from career choices by these negative attitudes" (82).

If computer inequity in the classroom is a problem, the computer teacher is one person who might be able to alleviate the problem. The inequities must first be identified; the question of whether this is a problem must be answered; and then solutions must be proposed. This study will analyze the enrollment of two computer courses, Introduction to Computers and Computer Programming, and attempt to identify computer inequities by examining student's year in school, gender, race, computer grade, math class, math grade, and composite achievement score.

HYPOTHESES

1. There will be no difference in the number of students enrolled in Introduction to Computers for the years 1984 through 1987.
2. There will be no difference in the number of students enrolled in Computer Programming for the years 1984 through 1987.
3. Enrollment in Introduction to Computers will not be equally distributed among sophomores, juniors, and seniors.
4. Enrollment in Computer Programming will not be equally distributed among sophomores, juniors, and seniors.

5. There will be no relationship between the student's year in school and his computer grade in Introduction to Computers.
6. There will be no difference between the number of males and females enrolled in Introduction to Computers.
7. There will be no difference between the number of males and females enrolled in Computer Programming.
8. There will be no difference between the number of males and females in the two courses combined.
9. Female enrollment in Introduction to Computers will not be equally distributed among sophomores, juniors, and seniors.
10 There will be no statistically significant difference between the computer grades of the males and the females in Introduction to Computers.
11. There will be no statistically significant difference between the computer grades of the males and females in Computer Programming.
12. Enrollment will not be equally distributed among Basic-, Intermediate-, and High-level math courses in Introduction to Computers.
13. Enrollment will not be equally distributed among Basic-, Intermediate-, and High-level math courses in Computer Programming.

14. There will be no statistically significant correlation between the computer grades and math grades of female students in Introduction to Computers.
15. There will be no statistically significant correlation between the computer grades and math grades of male students in Introduction to Computers.
16. There will be no statistically significant correlation between the computer grades and math grades of all students in Introduction to Computers.
17. There will be no statistically significant correlation between the computer grades and math grades of female students in Computer Programming.
18. There will be no statistically significant correlation between computer grades and math grades of male students in Computer Programming.
19. There will be no statistically significant correlation between the computer grades and math grades of all students in Computer Programming.
20. There will be no statistically significant correlation between the computer grades and composite achievement scores of female students in Introduction to Computers.

21. There will be no statistically significant correlation between the computer grades and composite achievement scores of male students in Introduction to Computers.
22. There will be no statistically significant correlation between the computer grades and composite achievement scores of all students in Introduction to Computers.
23. There will be no statistically significant correlation between the computer grades and composite achievement scores of female students in Computer Programming .
24. There will be no statistically significant correlation between the computer grades and composite achievement scores of male students in Computer Programming.
25. There will be no statistically significant correlation between the computer grades and composite achievement scores of all students in Computer Programming.

DEFINITION OF TERMS

BASIC - a common beginning programming language; Beginners All-Purpose Symbolic Instruction Code

computer - a data processing machine that compares and analyzes but does not necessarily calculate; supplies output information which is derived from the accepted input information.

computer literacy - state of being literate about computers.

correlation - the tendency for corresponding observations in two or more series to vary together from the averages of their respective series, that is, to have similar relative position.

equity - state or quality of being equal or fair.

frequency distribution - a descriptive statistic that describes how the items within a particular variable are distributed.

inequity - want of equity or an instance of it.

mean (arithmetic) - a measure of central tendency which is obtained from the sum of the measures, observations, magnitudes, items, or scores in a statistical series, divided by their number, or frequency.

programming - preparation of a computer to perform various operations upon data put into it.

random sample - a sample selected in such a way as to guarantee equal probability of selection to all possible samples of this size that could be formed from the members of the universe involved.

statistically significant difference - a difference between two comparable statistics, computed from separate samples that is of such magnitude that the probability that the difference may be imputed to chance is less than some defined limit.

t-test - a statistical test resulting in evidence for the acceptance or rejection of a null hypothesis.

variable - any trait that changes from one case or condition to another.

LIMITATIONS

This study is limited by the number of variables analyzed. A follow-up study might include IQ, other course grades, and other achievement scores from the Metropolitan Achievement Test, in addition to the composite score used. Another study might also include the students in the business department's word processing classes.

CHAPTER II

REVIEW OF RELATED LITERATURE

Research revealed more males than females enrolled in computer classes at the secondary level, especially programming classes. In high school there seemed to be less interest in computers by females. Miura and Hess studied the relationship between gender and computer access, interest, and usage. Their first study revealed that boys owned more home computers than did girls (5). In a typical computer-owner family, boys used the computer the most (6). The second study found three times as many boys as girls enrolled in summer computer camps and classes (6). Also, as the classes became more difficult and more expensive, the number of girls enrolled decreased (6-7). Computer software titles were rated by boys and girls in the third study , and a larger percentage of them were perceived as being of more interest to boys than to girls (8).

Computer inequity and gender were studied as part of the Science Assessment and Research Project conducted during the 1981-1982 school year with a national random sample of 18,000 9-, 13-, and 17-year old students by Anderson and others. They found "no significant differences in the number of males and females reporting any use of computers in school," but

found that a "substantial gap remains in signing up for programming classes" (7).

Fetler examined the knowledge, attitudes, and experiences of California sixth- and twelfth-grade students in the area of computers. He found the boys' overall performance superior to the girls' (184-5), less positive attitudes towards computers by the girls (187), and fewer girls exposed to computers in the classroom (188).

Several researchers noted a lack of self-confidence about computers demonstrated consistently by females. When Collis studied attitudes toward computers, she found sex differences more pronounced than age differences (33). She surveyed over 1800 eighth- and twelfth-grade students in two British Columbia school districts and found that "the typical girl felt that women in general were capable, but that she as an individual was not competent or likely to be a computer user" (34).

Lucking found the same lack of confidence in the females in his study of 500 ninth grade students who were part of a mandatory four-week computer literacy program. The females "felt that boys would perform better than girls even though this was not true as determined by grades in the course" (82).

Jackson and Yamanaka studied women from nineteen to forty-nine years old "to examine the relationships between women's ages, goals, literacy, and attitudes toward computers and advanced technology" (12). Even these older women felt that men were more knowledgeable about computers than women, and "the majority of women believed that other women would be more knowledgeable than themselves" (13).

Loyd and Gressard examined "computer anxiety, computer confidence, and computer liking... to explore the possible effects of computer experience, age, and sex on these computer attitudes" (68). Computer experience affected all three attitudes; sex was not found to affect any; and age was statistically significant only for computer liking (73). They thought that this might be a reflection of the younger students associating computers with video games. However, they found "no clear trend of increase or decrease in computer liking with age" (76).

By studying over 400 students in a required introductory computer science course, Lockheed and others found gender, year in school, and mathematics course all related to gain in computer literacy.

They found

> ...girls gained less than expected, while boys gained more...; ...tenth grade students gained more than expected, while eleventh and twelfth grade students gained less...; ...students enrolled in general mathematics and in freshman college preparatory mathematics gained less than expected, while students in sophomore or junior college preparatory mathematics gained more... (87).

Using a large sample of university freshmen, Dambrot and others found small but statistically significant sex differences in computer attitude, aptitude, and involvement (83). They also investigated the relationship of math aptitude, math experience, and scholastic achievement to computer involvement and found them highly related to a computer aptitude test (77). The relationship was slightly stronger for males that for females. For all students "math aptitude, computer attitude, high school grades, and computer experience were significant predictors of computer aptitude..." (77).

CHAPTER III

DESIGN OF STUDY

The high school in which the study took place offered three computer courses. Two were programming courses taught by math teachers. Introduction to Computers was a one semester BASIC programming course with no pre-requisite, and Computer Programming was a year of advanced BASIC programming with a pre-requisite of Algebra II. Both courses were taught by math teachers. The third was a year of word processing offered by the business department and therefore was not included in the study.

The study was limited to an analysis of the two programming courses for the school years 1984 through 1987. Permanent records of 388 students from the Introduction to Computers course and 127 students from the Computer Programming course were reviewed. Thirty-four students were eliminated from the study before analysis was begun because of incomplete records. The variables analyzed for each student in the study were:

1. year in school when enrolled in a computer course (sophomore/10, junior/11, senior/12)
2. sex (M, F)

3. race (Caucasian/C, Spanish/S, Black/B, Oriental/O)
4. grade in computer class (A+/12, A/11, A-/10, B+/9, B/8, B-/7, C+/6, C/5, C-/4, D+/3, D/2, D-/1, F/0)
5. math course enrolled in while taking the computer class or highest level math class taken at that time (Basic Math/1, Pre-Algebra/2, Consumer Math/3, Algebra I/4, Geometry/5, Algebra II/6, Senior Math/7, Pre-Calculus/8)
6. grade in that math class (same as for #4)
7. composite raw score from the Metropolitan Achievement Test given to each student in the 9th grade (Total possible = 275).

All statistical analyses were performed using STATS PLUS: A GENERAL STATISTICS PACKAGE FOR THE APPLE II.

CHAPTER IV

ANALYSIS OF DATA

ENROLLMENT

(Hypotheses 1 and 2)

Related literature revealed that the number of computers in schools and homes is growing, and the amount of time they are used is also growing. The enrollment for both courses declined from 1984 to 1986. In 1987 the Introduction to Computers enrollment increased and the Computer Programming enrollment stabilized. Figures for the 1988 school year might indicate whether or not this is the beginning of an upward trend. Chart 1, page 17, gives the enrollment figures for each class from 1984 to 1987.The computer lab and the courses were new in 1984, a fact which might explain the larger enrollments in 1984 and 1985.

YEAR IN SCHOOL

(Hypotheses 3 through 5)

The only article dealing with computer interest and age revealed no trend of increase or decrease in interest with age in high school. In 1984 and 1985, when the computer lab was new, there were more juniors and seniors in Introduction to Computers, but more sophomores in 1986 and 1987. Sophomores were not

Chart 1

Enrollment Figures

	Introduction to Computers			Computer Programming		
	Male	Female	Total	Male	Female	Total
1984	60	66	126	27	16	43
1985	53	51	104	21	13	34
1986	32	38	70	16	9	25
1987	39	49	88	19	6	25
Totals	184	204	388	83	44	127

permitted to enroll in the class until 1985. After that year nearly half of the students were sophomores.

Since students would usually take Algebra II during their junior year, the pre-requisite of Algebra II for Computer Programming eliminated sophomores from the class. Therefore, it was composed of only juniors and seniors each year, except for 1987 when one sophomore was permitted to enroll in the class. Chart 2, page 19, shows enrollment by class for each course. (See Table I in the Appendix for cross-tabulation on year in school for each course.)

For each year of the Introduction to Computers course cross-tabulation on year in school and computer grade revealed no relationship between the two. In fact, the grade given most often to sophomores in 1985 and 1986 was the grade A. The grade earned most often to sophomores, juniors, and seniors in 1987 was the grade B. (See Table II in the Appendix for the cross-tabulation on year in school and computer grade.)

GENDER

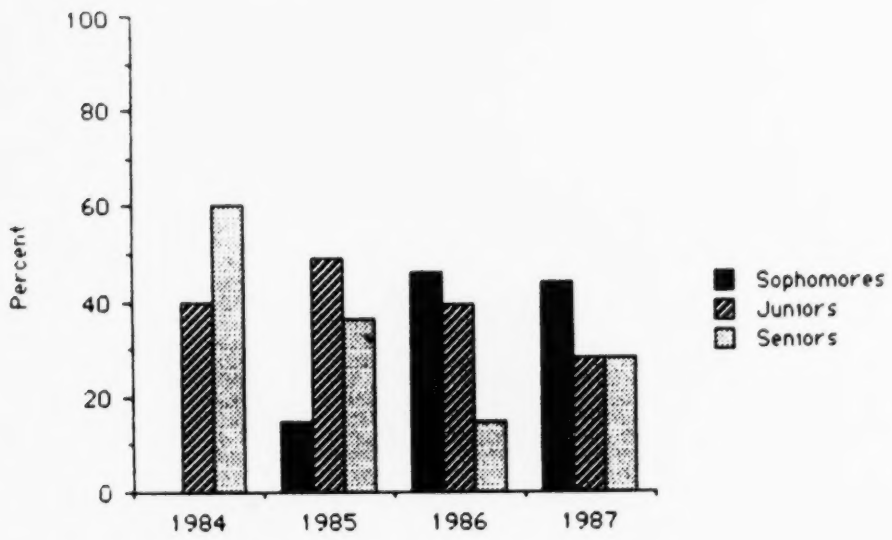
(Hypotheses 6 through 9)

Research revealed more interest in computers by males than by females. There were, however, more females than males in the Introduction to Computers

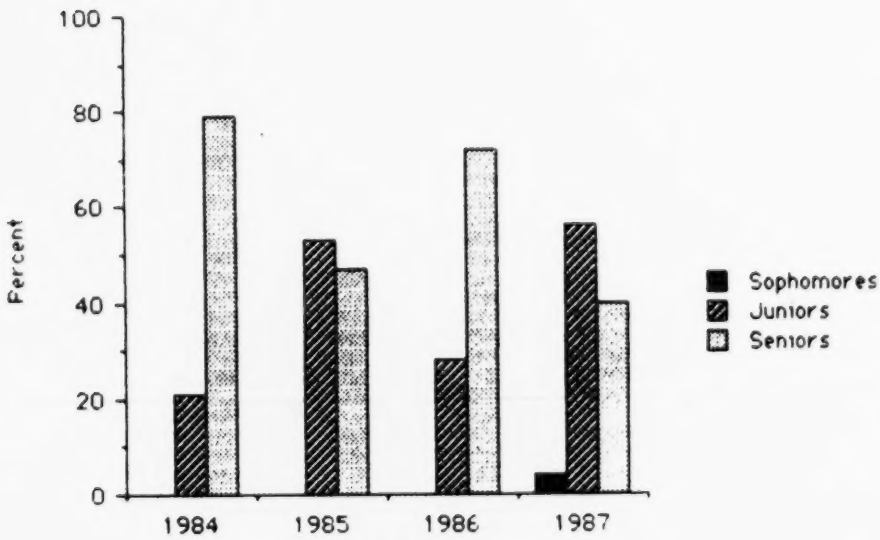
Chart 2

Enrollment by Class

Introduction to Computers



Computer Programming



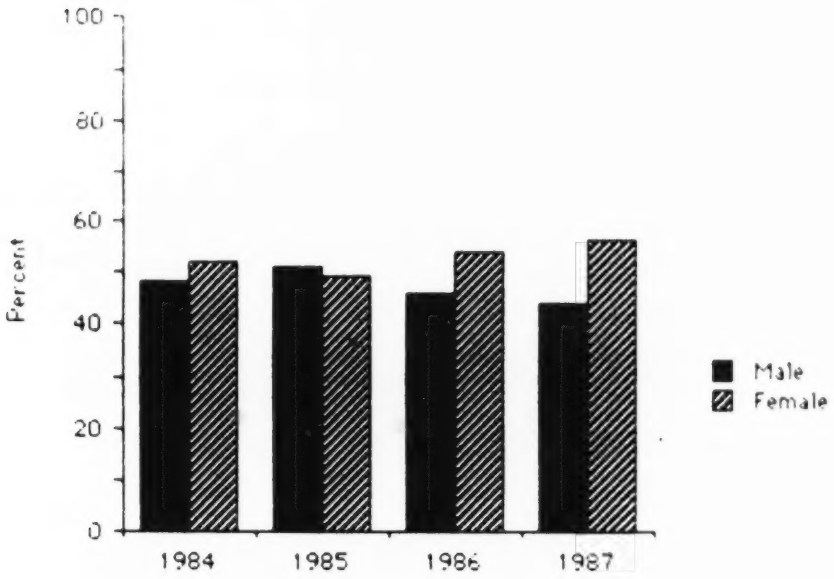
course each year except 1985, even though the percentages of males and females were very close all four years. Males dominated the enrollment in the Computer Programming course each year. During the first three years of the study, they outnumbered the females by nearly two to one and in 1987 by nearly three to one. When the figures for the two courses were combined, it was found that there were more males (267) than females (248) for the four years. Chart 3, page 21, shows enrollment by gender for each course. (See Table III in the Appendix for cross-tabulation on gender.)

The percentages of males and females in Introduction to Computers were very close each year of the study. The females tended to be juniors and seniors in 1984 and 1985. However, in 1986 and 1987 there were more sophomore females. In fact, nearly half of the females were sophomores both years. Chart 4, page 22, shows female enrollment by year in school for Introduction to Computers. (See Table IV in the Appendix for cross-tabulation on year in school.)

Chart 3

Enrollment by Gender

Introduction to Computers



Computer Programming

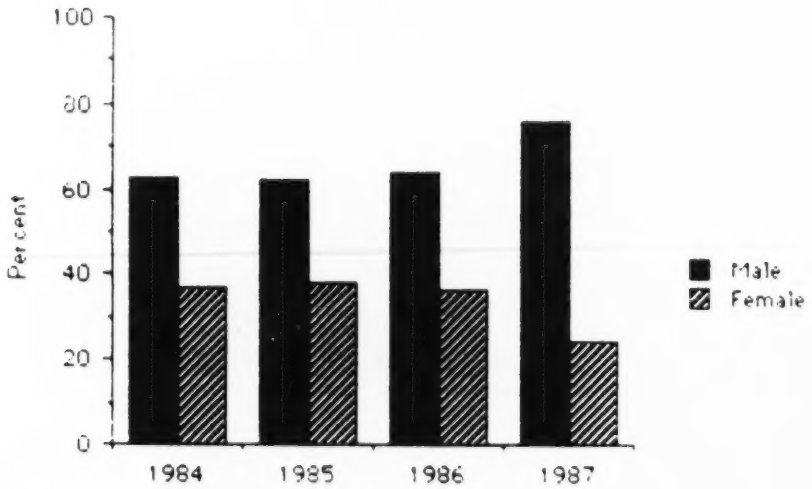
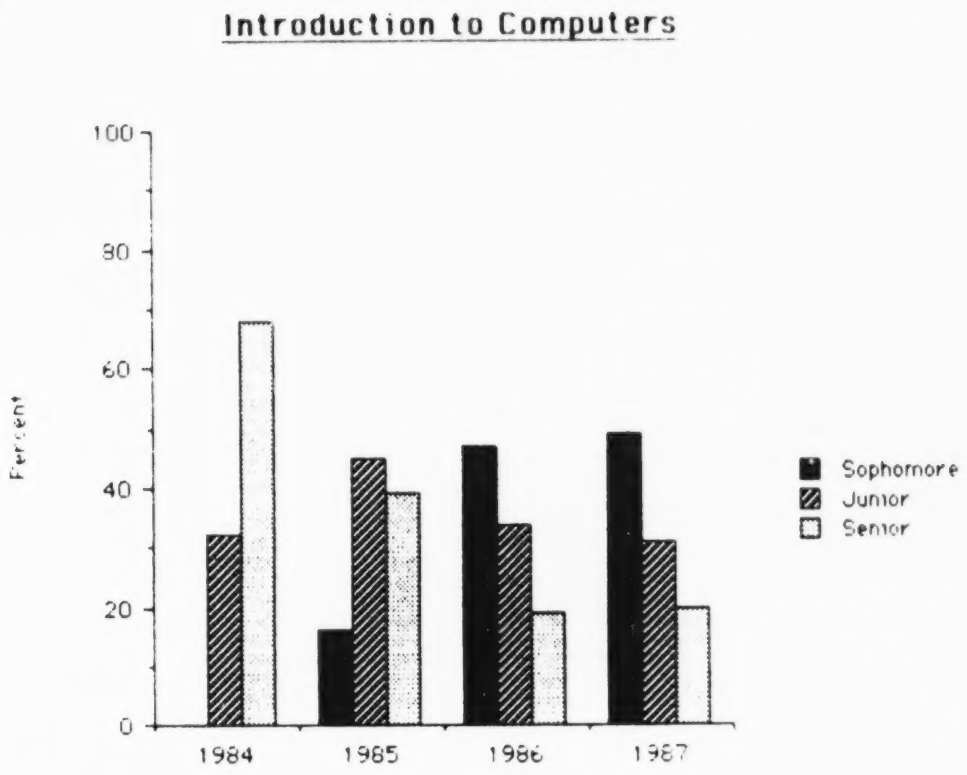


Chart 4

Female Enrollment by Year in School



GENDER/COMPUTER GRADE

(Hypotheses 10 and 11)

One might think that less interest in computers by females might lead to lower grades. This study found no statistically significant difference (p=.6819) between the computer grades of females and males in the Introduction to Computer course when the four years were analyzed together. The t-test results for 1986 (p=.5866) and 1987 (p=.5915) indicated no statistically significant difference in means, while the results for 1984 (p=.0268) and 1985 (p=.0416) indicated the differences might be significant. The females had the higher mean in 1984, and the males had it in 1985.

The t-test results for the Computer Programming course indicated no significant difference (p=.3809) in means for females and males when the four years were analyzed together. In fact, no statistically significant difference was found for any year. (See Table V in the Appendix for the t-test results for each course.)

MATH CLASS

(Hypotheses 12 and 13)

Research in related literature suggested that students with higher achievement in math might also have higher interest in computers. Each year nearly half or more of the students in the Introduction to Computers course were in intermediate-level math. However, 25% of the students in 1984 and 23% in 1987 were taking basic-level courses .

As was expected in the Computer Programming course with the pre-requisite of Algebra II, almost all students were in high-level math. In fact, 100% of the students in 1986 and 1987 were. Chart 5, page 25, shows enrollment for both courses by student's math class level. (See Table VI in the Appendix for cross-tabulation on math class level for each course.)

COMPUTER GRADE/MATH GRADE

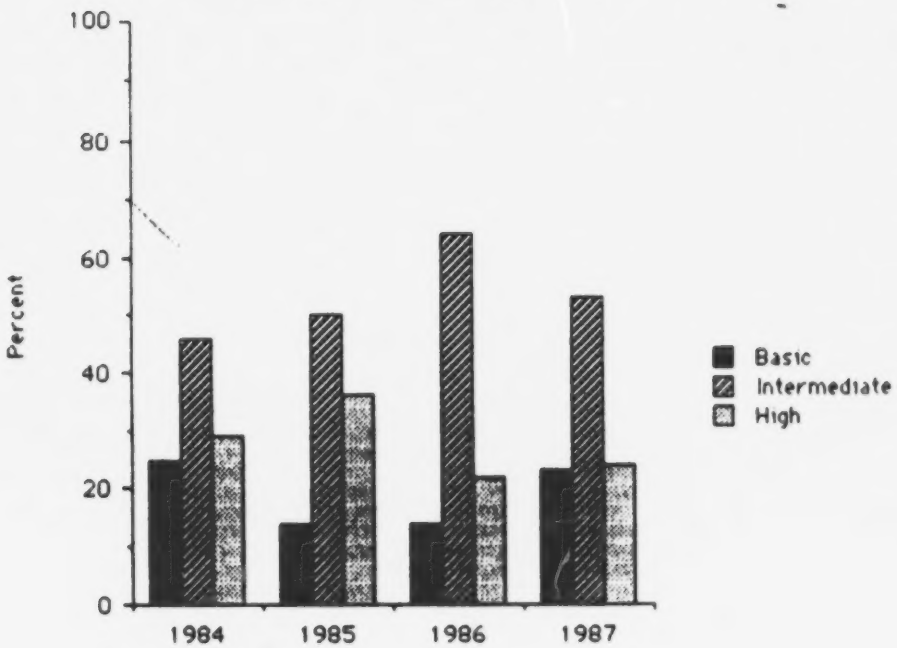
(Hypotheses 14 through 19)

There was no literature found specifically comparing computer grade and math grade. This study showed a statistically significant positive correlation between the student's computer grade and math grade, regardless of the level of math for each year in the study. This remained true for females and males in

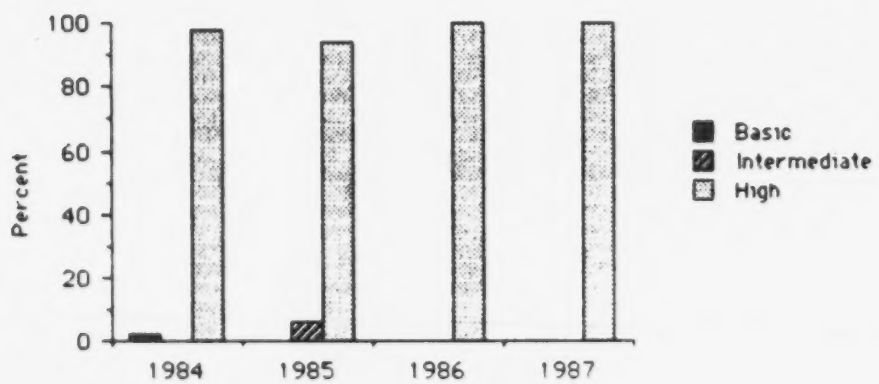
Chart 5

Enrollment in Three Levels of Math Classes

Introduction to Computers



Computer Programming



both computer courses. (See Table VII in the Appendix for correlation results.)

COMPUTER GRADE/ACHIEVEMENT SCORE

(Hypotheses 20 through 25)

Most research indicated that better students tend to dominate computer use. In the Introduction to Computers course a positive correlation statistically significant at the .01 level between computer grade and a composite achievement score was shown for both males and females every year.

In the Computer Programming course a statistically significant positive correlation between computer grade and composite achievement score was shown for each year, even though one group of females (r=.206) and one group of males (r=.252) produced a positive correlation that was not significant. (See Table VIII in the Appendix for correlation results for each course.)

RACE

There were only sixteen non-Caucasian students in four years of Introduction to Computers and only one in Computer Programming. No analysis was attempted.

CHAPTER V

SUMMARY

The purpose of this study was to analyze the enrollment of two computer courses for a period of four years. The variables analyzed for each student were year in school, gender, race, computer grade, level of math class enrolled in, math grade, and composite achievement score. The sample consisted of 388 students in four years of Introduction to Computers and 127 students in four years of Computer Programming. Twenty-five hypotheses were tested and eight were retained.

CONCLUSIONS

After an examination of the results obtained from the testing of the hypotheses, the possibility of an increase or at least stabilization of the enrollment of the courses was noted. No clear trend was evident at this time. Sophomores seem to be taking advantage of the only computer course available to them that year in school. Each year there were more females than males in the Introduction to Computers course, but more males than females in the other course. There were almost as many females as males in the combined enrollment figures. There was no statistically significant

difference found between the computer grades of the males and the females. The two classes were reaching mostly intermediate- and high-level math students, but some basic-level students also.There was a statistically significant positive correlation between computer grade/math grade and computer grade/composite achievement score.

Some inequities in enrollment were found in gender, year in school, and math class level. Whether or not these are a problem could be the subject of another study.

RECOMMENDATIONS

It is recommended that another study be made, analyzing additional variables. Those variables might be IQ, other course grades, and other achievement test scores. The study could also be expanded to include the students in the business department's word processing classes.

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APPENDIX

DATA FILE - INTRODUCTION TO COMPUTERS

COMPEQ4

	ID	CLASS	SEX	RACE	COMPGR	MATHCL	MATHGR	ACHSCO
1	871101	12	M	C	8	4	5	207
2	871104	12	F	C	2	2	1	196
3	871106	12	M	C	7	5	8	191
4	871114	12	F	C	8	5	5	233
5	871108	11	F	C	6	3	8	214
6	871109	11	F	C	6	4	3	200
7	871102	10	F	C	8	6	7	251
8	871103	10	F	C	7	5	5	220
9	871105	10	F	C	5	5	4	219
10	871107	10	M	C	9	5	7	223
11	871110	10	M	C	9	6	7	249
12	871111	10	F	C	5	5	4	208
13	871116	10	M	C	11	6	10	252
14	871209	11	F	C	8	3	10	209
15	871213	11	M	C	4	5	1	198
16	871217	11	M	C	12	6	12	253
17	871201	10	M	C	9	5	5	220
18	871202	10	F	S	3	4	0	210
19	871203	10	F	C	8	4	2	209
20	871204	10	F	C	2	4	4	190
21	871205	10	M	C	8	5	9	220
22	871206	10	F	C	9	6	11	258
23	871207	10	F	C	3	3	7	167
24	871210	10	M	C	5	4	3	196
25	871211	10	M	C	9	6	3	248
26	871214	10	M	C	7	5	5	240
27	871216	10	F	C	8	4	11	231
28	871215	10	F	C	9	6	7	240
29	871402	12	F	C	12	7	11	240
30	871405	12	M	C	9	5	3	243
31	871410	12	F	S	8	3	8	217
32	871414	12	M	C	9	6	0	225
33	871416	12	F	C	0	2	4	183
34	871417	11	M	C	2	5	3	189
35	871401	11	M	C	7	3	6	185
36	871403	11	F	C	9	5	7	215
37	871404	11	M	C	9	5	1	202
38	871408	11	F	C	1	4	1	177
39	871412	11	M	C	8	5	8	240
40	871413	11	F	C	3	3	6	197
41	871411	10	M	C	9	3	11	241
42	871407	10	M	C	8	4	4	206
43	871406	10	F	C	9	4	8	217
44	872102	12	M	C	8	7	2	241
45	872107	12	M	C	3	5	0	174
46	872109	12	F	C	10	7	6	249
47	872113	12	M	C	8	6	8	189
48	872115	12	F	C	4	2	10	174
49	872117	12	M	C	1	3	3	178
50	872201	12	F	C	6	5	0	217
51	872206	12	M	C	10	7	8	249
52	872212	12	M	C	6	6	1	219
53	872215	12	M	C	8	5	5	232
54	872402	12	F	C	3	3	5	153
55	872406	12	M	C	9	5	2	194

56	872409	12	F	C	8	6	2	215
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58	872101	11	F	C	10	5	8	243
59	872104	10	F	C	8	5	8	217
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65	872202	10	F	C	3	5	0	203
66	872203	10	F	C	8	4	4	197
67	872204	10	F	C	2	4	5	191
68	872205	10	F	C	2	2	7	186
69	872207	10	F	C	1	4	1	178
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71	872209	11	F	C	6	6	1	231
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73	872211	10	F	C	6	5	5	232
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75	872214	10	M	C	4	2	2	159
76	872216	11	F	C	9	6	2	229
77	872217	10	M	C	3	4	4	141
78	872401	11	F	C	9	5	5	222
79	872403	10	F	C	9	6	4	230
80	872404	10	F	C	7	5	3	214
81	872405	11	M	C	3	2	3	176
82	872407	11	M	C	1	2	7	144
83	872410	11	M	C	9	6	4	223
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88	872111	12	M	C	3	2	9	177
89	861101	10	M	C	3	4	3	215
90	861104	10	M	C	11	5	11	245
91	861106	10	M	C	10	5	9	240
92	861109	10	F	C	11	5	12	245
93	861110	10	M	C	11	5	11	260
94	861111	10	F	C	9	5	5	242
95	862101	10	F	C	8	5	3	182
96	862103	10	M	C	8	5	6	248
97	862105	10	M	C	11	5	10	238
98	862108	10	M	C	10	5	5	230
99	862110	10	F	C	10	5	10	253
100	862112	10	F	C	2	2	7	199
101	862113	10	F	C	1	4	4	175
102	862114	10	M	C	11	5	12	262
103	862115	10	F	C	9	5	8	260
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105	862205	10	F	C	6	5	1	225
106	862206	10	M	C	10	6	9	222
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115	862405	10	F	S	5	2	4	208

116	862406	10	M	C	9	5	2	246
117	862410	10	F	C	5	4	3	220
118	862412	10	M	C	11	5	9	187
119	862415	10	F	C	9	5	7	255
120	861112	10	M	C	5	4	2	204
121	861102	11	F	O	11	6	11	261
122	861105	11	M	N	10	6	7	230
123	861107	11	F	C	10	6	7	237
124	861114	11	F	C	4	4	2	165
125	862104	11	F	S	8	4	5	209
126	862106	11	M	C	11	6	8	262
127	862107	11	F	C	2	4	1	203
128	862109	11	M	C	0	4	1	163
129	862117	11	M	C	1	4	1	183
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131	861203	11	F	C	9	6	7	234
132	861206	11	M	C	7	5	5	223
133	861211	11	M	S	10	6	7	251
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135	862209	11	F	C	3	4	4	225
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137	862213	11	M	C	11	6	6	244
138	862215	11	F	C	4	2	1	193
139	862216	11	M	C	9	5	5	211
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142	861411	11	M	C	0	4	4	185
143	861415	11	F	C	6	5	0	226
144	861416	11	M	C	9	6	6	245
145	862404	11	M	C	8	5	3	201
146	862407	11	F	C	11	6	8	235
147	862414	11	M	C	4	5	1	178
148	861112	12	F	C	12	8	11	250
149	862102	12	M	C	11	8	12	261
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151	861202	12	F	C	9	5	6	210
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154	861214	12	F	S	2	5	3	216
155	861404	12	M	S	6	5	1	186
156	861406	12	F	C	11	6	1	202
157	861407	12	M	C	3	2	7	166
158	862401	12	F	C	5	6	2	204
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160	851103	11	F	C	1	2	1	170
161	851106	11	M	C	6	5	1	215
162	851105	11	F	C	9	6	3	219
163	851106	11	M	C	5	6	3	212
164	851112	12	F	C	4	6	0	223
165	851108	11	M	C	8	5	6	249
166	851110	12	F	C	10	6	9	231
167	851111	11	F	C	11	6	8	243
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169	851113	11	M	C	11	6	5	262
170	851114	11	M	C	0	5	1	177
171	851115	11	M	C	7	6	0	220
172	851116	12	M	C	6	5	1	196
173	851117	11	M	C	9	6	0	193
174	852101	11	M	C	10	6	4	232
175	852102	12	F	C	11	8	9	254

176	852104	12	M	C	3	5	2	222
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178	852106	11	M	C	5	5	5	210
179	852107	12	F	C	2	5	1	177
180	852108	12	F	C	11	8	6	251
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182	852110	11	M	C	6	5	3	209
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184	852112	12	F	C	9	8	3	245
185	852113	11	F	C	5	2	5	165
186	852115	12	F	C	3	4	2	212
187	852116	11	M	C	8	6	5	235
188	852117	11	M	C	9	6	4	244
189	852118	12	F	C	7	7	4	219
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191	851202	11	M	C	11	6	2	236
192	851203	11	F	C	11	6	11	261
193	851210	10	F	C	10	5	10	236
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195	851205	11	F	C	2	2	1	172
196	851206	11	M	C	7	6	1	233
197	851207	12	F	C	8	6	4	246
198	851209	12	M	C	1	2	3	203
199	851211	10	F	C	11	5	11	252
200	852201	11	M	C	8	6	2	221
201	852202	10	M	C	12	5	10	261
202	852203	10	M	C	12	5	12	263
203	852204	10	M	C	8	4	3	212
204	852205	11	F	C	3	2	6	215
205	852206	11	F	C	1	2	2	134
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210	852212	12	F	C	10	8	4	230
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219	852401	10	F	C	10	5	11	244
220	852402	11	M	C	10	5	7	217
221	852403	11	M	C	7	5	1	207
222	852404	12	M	C	9	5	4	231
223	852407	10	F	C	8	5	6	177
224	852408	10	M	C	10	4	4	242
225	852409	12	M	C	5	1	10	145
226	852411	11	M	C	8	5	4	210
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232	851501	12	F	C	7	5	1	196
233	851502	11	F	C	2	5	2	175
234	851503	11	F	C	8	6	2	226
235	851504	12	M	C	10	7	11	259

236	851505	11	M	C	5	5	3	212
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238	851507	12	F	C	7	5	5	228
239	851508	12	F	C	6	2	7	170
240	851509	12	F	C	9	6	4	243
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247	851516	10	F	C	3	5	2	195
248	852501	11	F	C	5	5	3	214
249	852502	11	F	C	6	4	3	212
250	852503	12	M	C	11	7	9	259
251	852504	11	F	C	4	3	6	175
252	852506	11	M	C	7	4	4	186
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258	852513	12	F	C	0	1	6	156
259	852514	11	F	C	5	3	3	147
260	852515	12	F	S	6	6	2	216
261	852516	12	M	C	12	8	10	263
262	852517	12	F	C	1	4	2	169
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264	841103	11	M	C	7	5	3	222
265	841105	12	F	C	4	2	6	147
266	841107	11	M	C	9	5	4	242
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268	841111	12	F	C	5	4	1	206
269	841113	12	F	C	11	6	11	252
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271	841117	11	F	C	4	5	7	202
272	841119	11	M	C	8	4	5	248
273	841123	11	M	C	6	5	7	213
274	841125	11	F	C	11	6	11	245
275	841127	11	F	C	1	2	3	202
276	841131	11	M	S	0	1	6	217
277	841133	12	F	C	7	5	4	203
278	841135	11	M	C	5	5	7	209
279	842101	11	M	C	5	5	1	172
280	842105	12	F	C	10	6	4	214
281	842107	11	M	C	7	6	3	197
282	842109	11	M	C	9	2	9	228
283	842111	11	F	C	7	3	8	242
284	842113	11	F	C	5	5	4	193
285	842115	12	F	C	10	4	7	203
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287	842119	12	M	S	2	2	0	189
288	484212	11	M	C	5	4	3	230
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297	841415	12	M	C	6	5	7	241
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299	841419	12	F	S	1	1	5	153
300	841421	12	M	C	0	4	1	231
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302	841425	11	F	C	10	6	8	224
303	841427	12	F	C	10	2	6	196
304	841431	12	F	C	6	4	6	208
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310	842409	12	F	S	0	1	8	145
311	842411	12	M	C	8	5	8	234
312	842413	12	F	C	8	5	3	222
313	842415	11	M	C	1	1	8	194
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317	842423	12	F	C	10	7	5	224
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321	842431	11	F	C	9	2	8	218
322	842433	12	M	C	10	6	6	242
323	842435	12	F	C	11	7	7	251
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325	841503	12	F	C	8	4	3	223
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327	841507	12	F	C	8	6	5	230
328	841509	12	F	C	1	1	7	156
329	841511	12	M	C	0	1	3	109
330	841513	12	M	C	6	4	5	229
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332	841517	12	M	C	6	2	4	195
333	841519	12	M	S	1	5	5	150
334	841521	11	F	C	10	5	8	219
335	841523	11	F	C	8	5	4	227
336	841525	12	M	C	7	5	4	226
337	841527	12	M	C	2	2	6	198
338	841529	12	F	C	9	6	6	187
339	841531	12	F	C	1	1	6	143
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341	842501	11	M	C	2	3	4	203
342	842503	12	F	C	10	6	6	237
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344	842507	12	F	C	2	1	7	121
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346	842511	12	F	C	8	6	2	218
347	842513	12	M	C	4	5	3	236
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353	842525	12	F	C	7	5	5	227
354	842527	12	M	C	10	6	2	232
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358	842535	12	F	C	11	6	8	257
359	841101	11	M	C	9	6	6	226
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361	841104	11	F	C	2	3	10	207
362	841105	11	M	C	6	5	7	183
363	841106	12	F	C	9	5	6	234
364	841107	11	M	C	0	1	4	169
365	841108	12	F	C	3	4	0	201
366	841109	11	M	C	2	4	1	198
367	841110	11	M	C	4	5	4	194
368	841111	12	M	C	8	6	5	223
369	841112	12	M	C	12	7	12	245
370	841113	12	F	C	12	7	10	253
371	841114	12	F	C	5	5	1	201
372	841115	12	M	C	6	4	3	197
373	841116	11	F	C	11	6	11	254
374	841117	12	F	C	4	2	4	201
375	842301	12	F	C	5	6	0	222
376	842302	11	M	C	6	5	2	235
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378	842305	11	M	C	7	5	9	223
379	842306	11	M	C	4	6	0	223
380	842307	12	F	C	5	4	3	188
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384	842311	12	M	C	8	5	4	232
385	842312	11	M	C	2	5	1	223
386	842313	11	F	C	8	6	1	243
387	842314	11	F	C	4	5	1	199
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DATA FILE - COMPUTER PROGRAMMING

COMPROG4

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3	8403	12	F	C	6	6	4	232
4	8404	11	M	C	7	6	1	250
5	8405	11	M	C	8	6	7	234
6	8406	11	M	C	10	6	9	264
7	8407	12	F	C	10	6	11	254
8	8408	12	M	C	2	3	5	157
9	8409	11	F	C	10	6	8	212
10	8410	11	F	C	4	6	5	253
11	8411	12	M	C	7	6	6	233
12	8412	12	M	C	7	6	2	204
13	8413	11	M	C	10	6	10	253
14	8414	11	M	C	8	6	10	222
15	8415	12	M	C	7	6	0	247
16	8406	12	M	C	7	7	7	258
17	8418	12	F	C	8	7	8	248
18	8419	12	M	C	9	7	9	226
19	8420	12	F	C	11	7	11	261
20	8421	12	M	C	11	7	11	243
21	8422	12	F	C	8	7	7	248
22	8423	12	M	C	10	7	6	254
23	8425	12	F	C	7	7	4	240
24	8426	12	M	C	10	7	9	258
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26	8428	12	F	C	12	7	10	244
27	8429	12	M	C	9	6	7	226
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29	8431	12	F	C	10	7	10	244
30	8434	12	M	C	7	6	4	225
31	8435	12	F	C	8	7	8	253
32	8436	12	M	C	10	7	11	250
33	8438	12	F	C	10	7	10	252
34	8439	12	F	C	11	7	8	234
35	8440	12	F	C	10	7	7	253
36	8441	12	M	C	9	7	8	244
37	8442	12	M	C	9	7	8	261
38	8444	12	M	C	5	6	4	234
39	8445	12	M	C	8	7	7	243
40	8446	12	F	C	8	7	8	241
41	8447	12	M	C	7	7	7	254
42	8448	12	F	C	5	6	4	217
43	8449	12	M	C	9	7	8	231
44	8501	12	M	C	6	6	2	222
45	8502	12	F	C	7	8	9	220
46	8503	12	M	C	9	6	1	242
47	8504	11	F	C	9	6	6	252
48	8505	11	M	C	10	6	11	263
49	8506	11	F	C	3	5	0	207
50	8507	11	F	C	7	6	6	250
[illegible]	8508	11	M	C	6	6	1	250
52	8509	12	F	C	6	5	4	227
53	8510	12	F	C	5	6	1	243
54	8511	11	M	C	6	6	4	248
55	8512	11	F	C	5	6	4	227

56	8513	11	M	C	11	6	10	262
57	8514	11	M	C	10	6	8	244
58	8515	11	F	C	10	6	9	257
59	8516	12	M	C	9	7	6	226
[illegible]	8517	12	M	C	11	8	10	255
61	8518	12	M	C	10	8	8	240
62	8419	12	M	C	6	6	1	183
63	8520	12	F	C	7	7	5	250
64	8521	12	F	C	11	7	10	245
65	8522	11	M	C	11	6	10	270
66	8523	11	M	C	10	6	11	259
67	8524	11	M	C	4	6	1	218
68	8525	11	M	C	6	6	0	246
69	8526	11	F	C	10	6	10	256
70	8527	12	F	C	10	8	6	216
71	8529	12	M	C	11	7	10	254
72	8530	12	F	C	9	8	7	237
73	8531	11	M	C	9	6	9	253
74	8532	12	M	C	10	8	9	253
75	8533	11	M	C	7	6	5	236
76	8536	11	M	C	10	6	7	256
77	8537	12	M	C	10	6	3	209
78	8601	12	F	C	5	6	1	190
79	8602	12	M	C	8	6	4	232
80	8603	11	M	C	7	6	5	233
81	8604	11	F	C	10	6	8	263
82	8605	11	M	C	11	6	12	263
83	8606	12	F	C	11	8	10	242
84	8607	12	M	C	8	7	8	247
[illegible]	8608	12	F	C	10	8	10	258
[illegible]	8609	12	M	C	10	8	8	263
87	8610	12	M	C	8	6	4	240
88	8611	11	M	C	7	6	5	234
89	8612	12	F	C	8	6	6	239
90	8613	12	M	C	6	7	4	244
91	8615	12	M	C	7	6	0	193
92	8618	12	M	C	9	7	7	249
93	8619	12	M	C	10	7	10	236
94	8620	11	M	C	7	6	6	252
95	8621	11	M	C	8	6	8	258
96	8623	12	M	C	4	7	6	252
97	8625	12	F	C	10	8	9	244
98	8626	12	F	C	7	7	4	229
99	8627	12	M	C	11	7	9	259
100	8628	12	F	C	10	8	11	246
101	8630	12	M	C	9	6	2	211
102	8629	11	F	C	10	6	6	231
103	8701	11	M	C	5	6	4	248
104	8702	12	M	C	8	8	5	249
105	8703	12	M	C	11	6	10	261
106	8704	12	M	C	7	7	6	241
107	8705	11	M	C	10	6	8	238
108	8706	12	M	C	10	8	7	247
109	8707	12	M	C	5	7	3	240
110	8708	12	F	C	7	6	5	177
[illegible]1	8709	12	F	C	9	7	7	237
112	8710	11	F	C	11	6	11	231
113	8711	11	M	C	5	6	8	187
114	8712	11	M	C	10	6	8	262
115	8713	11	M	C	11	6	11	260

116	8714	11	M	C	11	6	11	262
117	8715	11	M	C	12	6	12	263
118	8716	11	M	C	10	6	11	243
119	8717	11	M	C	11	6	10	245
120	8718	11	F	C	5	6	4	231
121	8719	12	M	C	8	8	9	253
122	8720	12	M	C	5	7	6	205
123	8721	10	M	C	12	6	12	264
124	8723	11	M	S	2	6	0	222
125	8724	12	M	C	9	8	9	260
126	8725	11	F	C	7	6	9	249
127	8727	11	F	C	8	6	5	242

TABLE I - YEAR IN SCHOOL - INTRODUCTION TO COMPUTERS

CROSS-TAB ON FILE COMPEQ84

	CLASS		
SOPH	JR	SR	
0	50	76	126
0%	39.7%	60.3%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ85

	CLASS		
SOPH	JR	SR	
16	51	37	104
15.4%	49%	35.6%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ86

	CLASS		
SOPH	JR	SR	
32	27	11	70
45.7%	38.6%	15.7%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ87

	CLASS		
SOPH	JR	SR	
39	25	24	88
44.3%	28.4%	27.3%	

UNCLASSIFIABLE RECORDS: 0

TABLE I - YEAR IN SCHOOL - COMPUTER PROGRAMMING

CROSS-TAB ON FILE COMPROG84

	CLASS		
SOPH	JR	SR	
0	9	34	43
0%	20.9%	79.1%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG85

	CLASS		
SOPH	JR	SR	
0	18	16	34
0%	52.9%	47.1%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG86

	CLASS		
SOPH	JR	SR	
0	7	18	25
0%	28%	72%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG87

	CLASS		
SOPH	JR	SR	
1	14	10	25
4%	56%	40%	

UNCLASSIFIABLE RECORDS: 0

TABLE II - YEAR IN SCHOOL/COMPUTER GRADE - INTRODUCTION TO COMPUTERS

CROSS-TAB ON FILE COMPEQ84

CLASS	COMPGR D	C	B	A	
SOPH	0	0	0	0	0
	.0%	.0%	.0%	.0%	.0%
JR	11	13	18	6	48
	9.2%	10.9%	15.1%	5.0%	40.3%
SR	11	22	21	17	71
	9.2%	18.5%	17.6%	14.3%	59.7%
	22	35	39	23	119
	18.5%	29.4%	32.8%	19.3%	

UNCLASSIFIABLE RECORDS: 7

CROSS-TAB ON FILE COMPEQ85

CLASS	COMPGR D	C	B	A	
SOPH	1	0	7	8	16
	1.1%	.0%	7.4%	8.5%	17.0%
JR	8	10	18	10	46
	8.5%	10.6%	19.1%	10.6%	48.9%
SR	7	3	15	7	32
	7.4%	3.2%	16.0%	7.4%	34.0%
	16	13	40	25	94
	17.0%	13.8%	42.6%	26.6%	

UNCLASSIFIABLE RECORDS: 10

CROSS-TAB ON FILE COMPEQ86

CLASS	COMPGR D	C	B	A	
SOPH	3	9	8	11	31
	4.5%	13.4%	11.9%	16.4%	46.3%
JR	4	5	9	7	25
	6.0%	7.5%	13.4%	10.4%	37.3%
SR	2	3	2	4	11
	3.0%	4.5%	3.0%	6.0%	16.4%
	9	17	19	22	67
	13.4%	25.4%	28.4%	32.8%	

UNCLASSIFIABLE RECORDS: 3

CROSS-TAB ON FILE COMPEQ 87

CLASS	COMPGR D	C	B	A	
SOPH	10	6	20	3	39
	11.5%	6.9%	23.0%	3.4%	44.8%
JR	6	5	11	3	25
	6.9%	5.7%	12.6%	3.4%	28.7%
SR	5	3	11	4	23
	5.7%	3.4%	12.6%	4.6%	26.4%
	21	14	42	10	87
	24.1%	16.1%	48.3%	11.5%	

UNCLASSIFIABLE RECORDS: 1

TABLE III - GENDER - INTRODUCTION TO COMPUTERS

CROSS-TAB ON FILE COMPEQ84

	SEX	
	M	F
	60	66
	47.6%	52.4%

126

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ85

	SEX	
	M	F
	53	51
	51%	49%

104

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ86

	SEX	
	M	F
	32	38
	45.7%	54.3%

70

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ 87

	SEX	
	M	F
	39	49
	44.3%	55.7%

88

UNCLASSIFIABLE RECORDS: 0

TABLE III - GENDER - COMPUTER PROGRAMMING

CROSS-TAB ON FILE COMPROG84

	SEX	
	M	F
	27	16
	62.8%	37.2%

43

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG85

	SEX	
	M	F
	21	13
	61.8%	38.2%

34

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG86

	SEX	
	M	F
	16	9
	64%	36%

25

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG87

	SEX	
	M	F
	19	6
	76%	24%

25

UNCLASSIFIABLE RECORDS: 0

TABLE IV - FEMALE/YEAR IN SCHOOL - INTRODUCTION TO COMPUTERS

CROSS-TAB ON FILE COMPEQ84F

	CLASS		
SOPH	JR	SR	
0	21	45	66
0%	31.8%	68.2%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ85F

	CLASS		
SOPH	JR	SR	
8	23	20	51
15.7%	45.1%	39.2%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ86F

	CLASS		
SOPH	JR	SR	
18	13	7	38
47.4%	34.2%	18.4%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQF 87

	CLASS		
SOPH	JR	SR	
24	15	10	49
49%	30.6%	20.4%	

UNCLASSIFIABLE RECORDS: 0

TABLE V - FEMALE/MALE/COMPUTER GRADE - INTRODUCTION TO COMPUTERS

1984

SAMPLE	N	MEAN	S.D.
F/COGR	66	6.742	3.169
M/COGR	60	5.467	3.291

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: 1.276

T(124) = 2.216 P = .0268

STANDARD ERROR = .576

POINT-BISERIAL CORRELATION = .195

1985

SAMPLE	N	MEAN	S.D.
F/COGR	51	6.255	3.267
M/COGR	53	7.472	2.812

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: -1.217

T(102) = -2.038 P = .0416

STANDARD ERROR = .597

POINT-BISERIAL CORRELATION = .198

1986

SAMPLE	N	MEAN	S.D.
F/COGR	38	6.895	3.270
M/COGR	32	7.344	3.562

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: -.449

T(68) = -.549 P = .5866

STANDARD ERROR = .817

1987

SAMPLE	N	MEAN	S.D.
F/COGR	49	6.367	2.970
M/COGR	39	6.718	3.086

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: -.351

T(86) = -.541 P = .5915

STANDARD ERROR = .648

ALL FOUR YEARS

SAMPLE	N	MEAN	S.D.
F/COGR	204	6.559	3.153
M/COGR	184	6.636	3.256

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: -.077

T(386) = -.237 P = .6819

STANDARD ERROR = .326

TABLE V - FEMALE/MALE/COMPUTER GRADE - COMPUTER PROGRAMMING

1984

SAMPLE	N	MEAN	S.D.
F/COGR	16	8.625	2.277
M/COGR	27	7.926	2.111

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: .699

T(41) = 1.020 P = .3148

STANDARD ERROR = .686

POINT-BISERIAL CORRELATION = .157

1985

SAMPLE	N	MEAN	S.D.
F/COGR	13	7.615	2.434
M/COGR	21	8.667	2.176

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: -1.051

T(32) = -1.309 P = .1973

STANDARD ERROR = .803

POINT-BISERIAL CORRELATION = .225

1986

SAMPLE	N	MEAN	S.D.
F/COGR	9	9.000	1.936
M/COGR	16	8.125	1.857

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: .875

T(23) = 1.114 P = .2765

STANDARD ERROR = .786

POINT-BISERIAL CORRELATION = .226

1987

SAMPLE	N	MEAN	S.D.
F/COGR	6	7.833	2.041
M/COGR	19	8.526	2.913

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: -.693

T(23) = -.539 P = .5955

STANDARD ERROR = 1.286

ALL FOUR YEARS

SAMPLE	N	MEAN	S.D.
F/COGR	44	8.295	2.226
M/COGR	83	8.289	2.271

HYPOTHESIZED DIFFERENCE: 0

OBTAINED DIFFERENCE: .006

T(125) = .015 P = .3809

STANDARD ERROR = .421

TABLE VI - MATH CLASS LEVEL - INTRODUCTION TO COMPUTERS

CROSS-TAB ON FILE COMPEQ84

	MATHCL		
BASIC	INTER	HIGH	
31	58	37	126
24.6%	46%	29.4%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ85

	MATHCL		
BASIC	INTER	HIGH	
15	52	37	104
14.4%	50%	35.6%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ86

	MATHCL		
BASIC	INTER	HIGH	
10	45	15	70
14.3%	64.3%	21.4%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPEQ87

	MATHCL		
BASIC	INTER	HIGH	
20	47	21	88
22.7%	53.4%	23.9%	

UNCLASSIFIABLE RECORDS: 0

TABLE VI - MATH CLASS LEVEL - COMPUTER PROGRAMMING

CROSS-TAB ON FILE COMPROG84

	MATHCL		
BASIC	INTER	HIGH	
1	0	42	43
2.3%	0%	97.7%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG85

	MATHCL		
BASIC	INTER	HIGH	
0	2	32	34
0%	5.9%	94.1%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG86

	MATHCL		
BASIC	INTER	HIGH	
0	0	25	25
0%	0%	100%	

UNCLASSIFIABLE RECORDS: 0

CROSS-TAB ON FILE COMPROG87

	MATHCL		
BASIC	INTER	HIGH	
0	0	25	25
0%	0%	100%	

UNCLASSIFIABLE RECORDS: 0

TABLE VII - COMPUTER GRADE/MATHGRADE - INTRODUCTION TO COMPUTERS

COMPGR/MATHGR/84/F

SAMPLE	N	MEAN	S.D.
COMPGR	66	6.74	3.16
MATHGR	66	4.86	2.98

	MAT
COM	372

COMPGR/MATHGR/84/M

SAMPLE	N	MEAN	S.D.
COMPGR	60	5.46	3.29
MATHGR	60	4.18	2.67

	MAT
COM	421

COMPGR/MATHGR/84

SAMPLE	N	MEAN	S.D.
COMPGR	126	6.13	3.27
MATHGR	126	4.53	2.84

	MAT
COM	406

COMPGR/MATHGR/85/F

SAMPLE	N	MEAN	S.D.
COMPGR	51	6.25	3.26
MATHGR	51	4.25	3.07

	MAT
COM	649

COMPGR/MATHGR/85/M

SAMPLE	N	MEAN	S.D.
COMPGR	53	7.47	2.81
MATHGR	53	4.16	3.14

	MAT
COM	546

COMPGR/MATHGR/85

SAMPLE	N	MEAN	S.D.
COMPGR	104	6.87	3.08
MATHGR	104	4.21	3.09

	MAT
COM	583

COMPGR/MATHGR/86/F

SAMPLE	N	MEAN	S.D.
COMPGR	38	6.89	3.26
MATHGR	38	5.00	2.99

	MAT
COM	560

COMPGR/MATHGR/86/M

SAMPLE	N	MEAN	S.D.
COMPGR	32	7.34	3.56
MATHGR	32	5.87	3.48

	MAT
COM	644

COMPGR/MATHGR/86

SAMPLE	N	MEAN	S.D.
COMPGR	70	7.09	3.38
MATHGR	70	5.40	3.23

	MAT
COM	605

COMPGR/MATHGR.87/F

SAMPLE	N	MEAN	S.D.
COMPGR	49	6.36	2.96
MATHGR	49	5.06	3.09

	MAT
COM	423

COMPGR/MATHGR/87/M

SAMPLE	N	MEAN	S.D.
COMPGR	39	6.71	3.08
MATHGR	39	4.87	3.32

	MAT
COM	442

COMPGR/MATHGR/87

SAMPLE	N	MEAN	S.D.
COMPGR	88	6.52	3.00
MATHGR	88	4.97	3.18

	MAT
COM	429

TABLE VII - COMPUTER GRADE/MATH GRADE - COMPUTER PROGRAMMING

COMPGR/MATHGR/84/F

SAMPLE	N	MEAN	S.D.
COMPGR	16	8.62	2.27
MATHGR	16	7.68	2.41

	MAT
COM	826

COMPGR/MATHGR/84/M

SAMPLE	N	MEAN	S.D.
COMPGR	27	7.92	2.11
MATHGR	27	6.77	2.97

	MAT
COM	633

COMPGR/MATHGR/84

SAMPLE	N	MEAN	S.D.
COMPGR	43	8.18	2.17
MATHGR	43	7.11	2.78

	MAT
COM	699

COMPGR/MATHGR/85/F

SAMPLE	N	MEAN	S.D.
COMPGR	13	7.61	2.43
MATHGR	13	5.92	3.17

	MAT
COM	858

COMPGR/MATHGR/85/M

SAMPLE	N	MEAN	S.D.
COMPGR	21	8.66	2.17
MATHGR	21	6.04	3.91

	MAT
COM	823

COMPGR/MATHGR/85

SAMPLE	N	MEAN	S.D.
COMPGR	34	8.26	2.30
MATHGR	34	6.00	3.60

	MAT
COM	808

COMPGR/MATHGR/86/F

SAMPLE	N	MEAN	S.D.
COMPGR	9	9.00	1.93
MATHGR	9	7.22	3.27

	MAT
COM	907

COMPGR/MATHGR/86/M

SAMPLE	N	MEAN	S.D.
COMPGR	16	8.12	1.85
MATHGR	16	6.12	3.05

	MAT
COM	561

COMPGR/MATHGR/86

SAMPLE	N	MEAN	S.D.
COMPGR	25	8.44	1.89
MATHGR	25	6.52	3.11

	MAT
COM	701

COMPGR/MATHGR/87/F

SAMPLE	N	MEAN	S.D.
COMPGR	6	7.83	2.04
MATHGR	6	6.83	2.71

	MAT
COM	752

COMPGR/MATHGR/87/M

SAMPLE	N	MEAN	S.D.
COMPGR	19	8.52	2.91
MATHGR	19	7.89	3.26

	MAT
COM	882

COMPGR/MATHGR/87

SAMPLE	N	MEAN	S.D.
COMPGR	25	8.35	2.70
MATHGR	25	7.64	3.12

	MAT
COM	864

TABLE VIII - COMPUTER GRADE/ACHIEVEMENT SCORE - INTRODUCTION TO COMPUTERS

COMPGR/ACHSCO/84/F

SAMPLE	N	MEAN	S.D.
COMPGR	66	6.74	3.16
ACHSCO	66	208.68	30.48

	ACH
COM	745

COMPGR/ACHSCO/84/M

SAMPLE	N	MEAN	S.D.
COMPGR	60	5.46	3.29
ACHSCO	60	213.35	27.37

	ACH
COM	503

COMPGR/ACHSCO/84

SAMPLE	N	MEAN	S.D.
COMPGR	126	6.13	3.27
ACHSCO	126	210.90	29.02

	ACH
COM	602

COMPGR/ACHSCO/85/F

SAMPLE	N	MEAN	S.D.
COMPGR	51	6.25	3.26
ACHSCO	51	207.11	33.96

	ACH
COM	805

COMPGR/ACHSCO/85/M

SAMPLE	N	MEAN	S.D.
COMPGR	53	7.47	2.81
ACHSCO	53	220.33	29.56

	ACH
COM	756

COMPGR/ACHSCO/85

SAMPLE	N	MEAN	S.D.
COMPGR	104	6.87	3.08
ACHSCO	104	213.85	32.33

	ACH
COM	792

COMPGR/ACHSCO/86/F

SAMPLE	N	MEAN	S.D.
COMPGR	38	6.89	3.26
ACHSCO	38	217.78	28.38

	ACH
COM	706

COMPGR/ACHSCO/86/M

SAMPLE	N	MEAN	S.D.
COMPGR	32	7.34	3.56
ACHSCO	32	218.78	29.86

	ACH
COM	791

COMPGR/ACHSCO/86

SAMPLE	N	MEAN	S.D.
COMPGR	70	7.09	3.38
ACHSCO	70	218.24	28.86

	ACH
COM	747

COMPGR/ACHSCO/87/F

SAMPLE	N	MEAN	S.D.
COMPGR	49	6.36	2.96
ACHSCO	49	212.12	23.23

	ACH
COM	789

COMPGR/ACHSCO/87/M

SAMPLE	N	MEAN	S.D.
COMPGR	39	6.71	3.08
ACHSCO	39	209.66	31.11

	ACH
COM	780

COMPGR/ACHSCO/87

SAMPLE	N	MEAN	S.D.
COMPGR	88	6.52	3.00
ACHSCO	88	211.03	26.87

	ACH
COM	773

TABLE VIII - COMPUTER GRADE/ACHIEVEMENT SCORE - COMPUTER PROGRAMMING

COMPGR/ACHSCO/84/F

SAMPLE	N	MEAN	S.D.
COMPGR	16	8.62	2.27
ACHSCO	16	242.87	13.49

	ACH
COM	206

COMPGR/ACHSCO/84/M

SAMPLE	N	MEAN	S.D.
COMPGR	27	7.92	2.11
ACHSCO	27	238.14	23.71

	ACH
COM	649

COMPGR/ACHSCO/84

SAMPLE	N	MEAN	S.D.
COMPGR	43	8.18	2.17
ACHSCO	43	239.90	20.45

	ACH
COM	521

COMPGR/ACHSCO/85/F

SAMPLE	N	MEAN	S.D.
COMPGR	13	7.61	2.43
ACHSCO	13	237.46	16.46

	ACH
COM	520

COMPGR/ACHSCO/85/M

SAMPLE	N	MEAN	S.D.
COMPGR	21	8.66	2.17
ACHSCO	21	242.33	20.76

	ACH
COM	545

COMPGR/ACHSCO/85

SAMPLE	N	MEAN	S.D.
COMPGR	34	8.26	2.30
ACHSCO	34	240.47	19.12

	ACH
COM	540

COMPGR/ACHSCO.86/F

SAMPLE	N	MEAN	S.D.
COMPGR	9	9.00	1.93
ACHSCO	9	238.00	21.14

	ACH
COM	821

COMPGR/ACHSCO/86/M

SAMPLE	N	MEAN	S.D.
COMPGR	16	8.12	1.85
ACHSCO	16	241.62	18.88

	ACH
COM	252

COMPGR/ACHSCO/86

SAMPLE	N	MEAN	S.D.
COMPGR	25	8.44	1.89
ACHSCO	25	240.31	19.36

	ACH
COM	435

COMPGR/ACHSCO/87/F

SAMPLE	N	MEAN	S.D.
COMGR	6	7.83	2.04
ACHSCO	6	227.83	25.83

	ACH
COM	147

COMPGR/ACHSCO/87/M

SAMPLE	N	MEAN	S.D.
COMPGR	19	8.52	2.91
ACHSCO	19	244.73	20.61

	ACH
COM	713

COMPGR/ACHSCO/87

SAMPLE	N	MEAN	S.D.
COMPGR	25	8.35	2.70
ACHSCO	25	240.68	22.62

	ACH
COM	587

RESUME

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EDUCATIONAL BACKGROUND

B. S. in Secondary Mathematics Education from Butler University, Indianapolis, Indiana, 1965.

EMPLOYMENT EXPERIENCE

September 1965 - May 1967 -- Mathematics teacher, grades 9 through 12, Lawrence Central High School, Indianapolis, Indiana

June 1967 - August 1982 -- wife, mother of two, bookkeeper for People's Drug Store, Plymouth, Indiana

September 1982 -present -- Mathematics teacher and Computer teacher, grades 9 through 12, Plymouth High School, Plymouth, Indiana